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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,526	01/15/2004	Bing Shu	247711US2	4559
22850	7590	03/15/2006	EXAMINER	
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			GLEITZ, RYAN M	
			ART UNIT	PAPER NUMBER
			2852	

DATE MAILED: 03/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/757,526

Applicant(s)

SHU ET AL.

Examiner

Ryan Gleitz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 December 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-6,8-21,23-25 and 27-36 is/are rejected.
- 7) ☒ Claim(s) 3,7,22 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 November 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10/11/05;11/22/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Drawings***

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the portion of the apparatus that stirs the developer (claims 1 and 20), the binder resin and wax (claims 1 and 20), the dispersion diameter (claims 2 and 21), the circularity of the toner (claims 4 and 23), and the particle diameter of the toner (claims 5 and 24) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

As discussed with Applicant on 8 March 2006, these drawing requirements can be met by adding a figure depicting a toner particle, including labeling of the dimensions (dispersion diameter, circularity, particle diameter) and the components (wax, binder resin). Additionally, the apparatus that performs stirring should be added to the current drawings.

Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1, 9, 13-17, 20, 28, and 32-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (Admission) in view of Yuasa (JP 11-095477).

Admission discloses an image forming apparatus including a photoconductor; a latent electrostatic image forming unit for forming a latent electrostatic image on the photoconductor; a developing unit for developing the latent electrostatic image using a developer comprising a toner to form a visible image, a transfer unit for transferring the visible image to a recording medium; and a cleaning unit for removing the developer on the photoconductor surface. See Specification, p. 1.

Sensors detects the toner amount adhering to the photoconductor surface and feeds this back to the amount control. See specification, p. 4. This reads on a developer amount detection

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unit for detecting developer amount adhering to the photoconductor surface by a reflecting photosensor.

Admission also discloses that it is known in general that in the case of a mode where one copy is made from one original, 2 to 6 times the rotation (stirring) time is required compared to the developer time per sheet when continuous copies are made. Specification, p. 11, lines 2-8.

Regarding claims 9 and 28, the outer diameter of the photoconductor is 20 mm to 40 mm. See Specification p. 4, lines 11-12.

Regarding claims 13 and 32, the system line speed of the image forming apparatus is 100 mm/sec to 200 mm/sec. See Specification p. 11, lines 10-12.

Regarding claim 14 and 33, the developer stirring time when one A4 copy is made from one original is 7.5 seconds, which is 4 seconds or more. See Specification, p. 11, lines 15-17.

Regarding claims 15 and 34, the reflecting photosensor is a remote type, and the distance between the sensor and the photoconductor surface is 15 mm to 25 mm. See Specification, p. 5, line 15.

Regarding claim 17, the cleaning unit is a counter blade. See Specification, p. 7, line 15.

Admission does not disclose the dynamic frictional coefficient of the toner in the embodiment discussed above.

However, Yuasa et al. disclose a toner including a binder resin and a wax, and the dynamic frictional coefficient of the toner is 0.12 to 0.30, which reads on a range of 0.15 to 0.45 with sufficient specificity. See abstract.

It would have been obvious to one of ordinary skill in the art to modify the image forming apparatus of Admission with the toner taught by Yuasa et al. to prevent filming on a photoreceptor. Abstract, lines 1-4.

Claims 2, 5, 21 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view of Takeda et al. (JP 2002-365847).

Admission and Yuasa disclose the image forming apparatus above but does not disclose that the average dispersion diameter of the wax in the toner is between 0.1 and 0.8 microns and does not disclose the particle diameter of the toner.

However, Takeda et al. disclose a toner with a binder resin and a wax, in which the average dispersion diameter of the wax in the toner is 0.2 to 0.4 microns, which reads on the claimed range of 0.1 to 0.8 microns. The average particle size of the toner is 7 microns, which reads on the claimed range of 4 to 10 microns. See abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the toner properties taught by Takeda et al. to provide an electrophotographic toner of a small size have high cleanability and preventing fog. Abstract, lines 1-3.

Claims 4, 8, 23, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view Yuasa (JP 11-095477), and further in view of Kondo et al. (JP 2001-312090).

Admission and Yuasa disclose the image forming apparatus above but does not disclose the circularity of the toner or the number of components of the developer.

However, Kondo et al. disclose a two-component developer having a toner with a circularity from 0.93 to 0.97, which reads on the claimed range of 0.91 to 0.98. See abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the toner properties taught by Kondo et al. to provide a developer having a long life, generating no toner aggregates or causing no image defect such as so-called spots or white voids. Abstract, lines 1-3.

Claims 6 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view Enomoto et al. (JP 06-019297).

Admission and Yuasa disclose the image forming apparatus above but does not disclose the cohesion degree of the toner.

However, Enomoto et al. disclose a toner with a degree of cohesion from 3 to 30% to avoid scattering toner. See abstract, line 12.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the toner cohesion degree taught by Enomoto et al. to enable both prevention against scattering and improvement of quality. Abstract, lines 12-14.

Claims 10, 11, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view Tanigawa et al. (JP 02-287460).

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Admission and Yuasa disclose the image forming apparatus above but does not disclose that the photoconductor is organic.

However, Tanigawa et al. disclose an organic photoconductor with an organic semiconductor layer. See abstract, line 11-13.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the organic photoconductor taught by Tanigawa et al. to prevent a defective cleaning operation especially in low humidity. Abstract, lines 13-16.

Claims 12 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view of Eto (JP 2000-250245)

Admission and Yuasa disclose the image forming apparatus above but does not disclose that the photoconductor has a surface frictional coefficient between 0.3 and 0.7.

However, Eto disclose a photoconductor with a surface protective later have a coefficient of surface friction from 0.001-1.2, which reads on the claimed range of 0.3 to 0.7. See abstract.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the surface protective layer taught by Eto to enhance the cleanability of the photoreceptor as well as prolong the service life. Abstract, lines 1-2.

Claims 18 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view Taniguchi (JP 63-214785).



Admission and Yuasa disclose the image forming apparatus above but does not disclose that a toner recycling unit.

However, Taniguchi discloses an image forming apparatus including a toner recycling unit (13) that recovers toner removed from the photoconductor surface by the cleaning unit and feeds it back to the developing unit. See figure 3.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the toner recycling unit taught by Taniguchi. The suggestion for doing so would have been that the recycling unit reduces the cost of operating the apparatus and the waste produced by the apparatus.

Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Admission in view of Yuasa (JP 11-095477), and further in view Aoki et al. (US 5,912,100)

Admission and Yuasa disclose the image forming apparatus above but does not disclose the diameters of the charging, developing, and transfer rollers.

However, Aoki et al. disclose an image forming apparatus including a developing roller (4), a charging roller (2), and a transfer roller (5), each having a diameter of 15 mm, which reads on the claimed range of 10 to 20 mm. See 9, lines 37-43.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the image forming apparatus of Admission with the charging, developing, and transfer rollers of Aoki to further reduce the size of the apparatus.

***Allowable Subject Matter***

Claims 3, 7, 22, and 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

Applicant's arguments, see p. 13 of the response, filed 30 December 2005, with respect to the rejection of claims 1, 9, 13-17, 20, 28, and 32-35 under 35 USC 102(b) as being anticipated by Applicant's Admitted Prior Art have been fully considered and are persuasive.

The specific teachings of JP-A No. 11-95477 should not have been assumed to be part of the general prior art admission. Accordingly, the rejection under 35 USC 102(b) is withdrawn and this action is made non-final.

With respect to the dynamic frictional coefficient, Applicant submits, see p. 13, that the teaching by JP-A No. 11-95477 of 0.12 to 0.30 does not read on the range of 0.15 to 0.45. The reference must only disclose the range with sufficient specificity to constitute an anticipation under the statute. In this case, because Applicant has provided no evidence of unexpected results between 0.15 and 0.45 a teaching of 0.12 to 0.30 anticipates the range with sufficient specificity. See MPEP 2131.02.

***Contact Information***

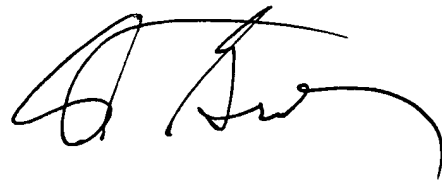
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan Gleitz whose telephone number is (571) 272-2134. The examiner can normally be reached on Monday-Friday between 9:00AM and 6:00PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Arthur Grimley can be reached on (571) 272-2136. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
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**Arthur T. Grimley**  
**Supervisory Patent Examiner**  
**Technology Center 2800**